# NEW COURSE PROPOSAL

## SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>ENVI</th>
<th>College/School</th>
<th>CRCD/Bristol Bay Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by</td>
<td>Todd Radenbaugh</td>
<td>Phone</td>
<td>907.842.8315</td>
</tr>
<tr>
<td>Email Contact</td>
<td><a href="mailto:bftar@uaf.edu">bftar@uaf.edu</a></td>
<td>Faculty Contact</td>
<td>Todd Radenbaugh</td>
</tr>
</tbody>
</table>

## 1. ACTION DESIRED

(CHECK ONE):

- [X] New Course
- [ ] Trial Course

## 2. COURSE IDENTIFICATION

<table>
<thead>
<tr>
<th>Dept</th>
<th>ENVI</th>
<th>Course #</th>
<th>No. of Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>110</td>
<td>1</td>
</tr>
</tbody>
</table>

### Justify upper/lower division status & number of credits:

This course is a required course designed to coincide with a series of other 100-200 level courses as part of the Environmental Studies (ENVI) Program. The 30-credit certificate program focuses on delivering quality entry-level coursework relevant to rural Alaska Native students with the goal of skill set development in the field of Environmental studies. The certificate will also lay a foundation for students interested in advanced university coursework in an associate or baccalaureate program.

## 3. PROPOSED COURSE TITLE:

Introduction to Water Quality I: Measurement and Calibration

## 4. CROSS LISTED?

YES/NO:

- [ ] Yes
- [X] No

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

### If yes, Dept:  
Course #

## 5. STACKED?

YES/NO:

- [ ] Yes
- [X] No

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

### If yes, Dept:  
Course #

## 6. FREQUENCY OF OFFERING:

(Every or Alternate)

- [ ] Fall, Spring, Summer — or As Demand Warrants
- [X] Spring

## 7. SEMESTER & YEAR OF FIRST OFFERING (if approved):

- [ ] Spring 2010

## 8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

### COURSE FORMAT:

(check one)

- [X] 1  
- [X] 2  
- [X] 3  
- [X] 4  
- [X] 5  

6 weeks to full semester

### OTHER FORMAT

(specify)

Mode of delivery

(specify lecture, field trips, labs, etc)

- [X] Five week face-to-face course

Face-to-face lecture, lab, and field experiences
9. CONTACT HOURS PER WEEK:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours/Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>LECTURE</td>
<td>3</td>
</tr>
<tr>
<td>LAB</td>
<td>2</td>
</tr>
<tr>
<td>PRACTICUM</td>
<td></td>
</tr>
</tbody>
</table>

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See [http://www.uaf.edu/uafgov/faculty/cd/credits.html](http://www.uaf.edu/uafgov/faculty/cd/credits.html) for more information on number of credits.

OTHER HOURS (specify type)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

This course introduces students to standard water quality methods used and applies them to rural Alaska. Students will become familiar with EPA water quality standards and programs that help preserve water quality in rural communities. Key topics covered include: stream ecology, wastewater management, storm water runoff, and data analysis.

11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Humanities</td>
</tr>
<tr>
<td>N</td>
<td>Natural Science</td>
</tr>
<tr>
<td>S</td>
<td>Social Sciences</td>
</tr>
</tbody>
</table>

Will this course be used to fulfill a requirement for the baccalaureate core? YES X NO

IF YES, check which core requirements it could be used to fulfill:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>Oral Intensive, Format 6</td>
</tr>
<tr>
<td>W</td>
<td>Writing Intensive, Format 7</td>
</tr>
<tr>
<td>S</td>
<td>Natural Science, Format 8</td>
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</tbody>
</table>

12. COURSE REPEATABILITY:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this course repeatable for credit?</td>
<td>YES</td>
</tr>
<tr>
<td>Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).</td>
<td></td>
</tr>
<tr>
<td>How many times may the course be repeated for credit? TIMES</td>
<td></td>
</tr>
<tr>
<td>If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS</td>
<td></td>
</tr>
</tbody>
</table>

13. GRADING SYSTEM:

<table>
<thead>
<tr>
<th>Type</th>
</tr>
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<tbody>
<tr>
<td>LETTER</td>
</tr>
<tr>
<td>PASS/FAIL</td>
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</tbody>
</table>

14. PREREQUISITES

None

RECOMMENDED

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

Has a memo been submitted through your dean to the Provost & VCAS for

| |

17. PREVIOUS HISTORY

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the course been offered as special topics or trial course previously? Yes/No</td>
<td>YES</td>
</tr>
<tr>
<td>If yes, give semester, year, course #, etc.:</td>
<td>Summer 02 - RD 195: Water Quality Monitoring</td>
</tr>
<tr>
<td></td>
<td>Spring 07 - RD 193: Water Quality Measurements</td>
</tr>
</tbody>
</table>
18. ESTIMATED IMPACT

Faculty is hired to teach this course. Depending on community requests, this course is easily taught in communities outside of Dillingham. If there is a great enough demand for the course, the instructor will travel to that location to deliver the course. The cost of the travel and per diem of the instructor will be paid by the USDA Alaska Native/Native Hawaiian Higher Education Grant.

ENVI program development and implementation is directly supported by the United States Department of Agriculture (USDA), Cooperative State Research, Education, and Extension Service Alaska Native/Native Hawaiian (CSREES AN/NH) Serving Institutions Higher Education Grants program. This project addresses the USDA goal of increasing the number of AN/NH students engaged in USDA careers. These careers include Environmental science, among others. This certificate will serve these requirements by not only increasing the number of students entering a certificate program, stepping up to either an AAS degree, AS degree or a Bachelor degree but by also preparing students for entry-level science employment.

Because the USDA’s interest is, ultimately, bringing more AN/NH students into USDA careers at the bachelors and masters level, the above mentioned grant will fund the current effort until at least 2012, USDA support currently stands at one full-time science faculty member who helped develop the program plus funding for a total of eight Alaska Native students to complete the ENVI certificate within approximately three years.

Office and classroom space will be provided by existing University urban and rural campuses throughout Alaska. Some of the rural communities with available facilities include Galena, Fort Yukon, Tok, Nenana, McGrath, Unalaska, Dillingham, Bethel, Nome, Kotzebue, Barrow, and Sitka. In villages without a University facility, training space can be found in the local schools and businesses and are reasonably supported by student tuition fees. No new facilities or space will be required.

As the University continues to upgrade its capacity to address the growing need for adequate education in rural Alaska, specifically with regard to the distance delivery processes and audio/visual equipment, and computer delivery platforms the ENVI certificate will be made readily available to more students.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (ffk1j@uaf.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?

Include information on the Programs/Departments contacted (e.g., email, memo)

The primary faculty are employees of the University. Dr. Todd Radenbaugh has been hired through the USDA Higher Education Grant specifically to coordinate the ENVI program as well as teach required ENVI and other appropriate science courses. Current faculty comes
from the CRCD as will Fairbanks-based UAF faculty. SNRAS faculty will also participate in development and instruction of some ENVI certificate courses. Fairbanks-based classes may show a slight increase in student registrations.

ENVI program information and course requirements were sent out for comments two times, once via email in September 2006, and a second time in September 2008, to specific University departments that may have increased course enrollments due to the required science courses and the elective credit options ENVI students may take. Also discussed was the possibility of students eventually bridging over to other science degree programs. The department contact names include:

**September 2006**
Concerning Required Science, Communication, Computation, and Human Relations Courses:
- Rich Boone, Biology
- Tom Clausen, Chemistry
- Michael Whalen, Geology
- Judy Atkinson, CRCD Developmental Math
- Susan Andrews, CRCD Humanities Division Chair

Concerning Elective Credit Options:
- Rich Boone, Biology
- Tom Clausen, Chemistry
- Michael Whalen, Geology
- Steve Sparrow, School of Natural Resources and Agricultural Sciences
- Denis Wiesenburg, School of Fisheries and Ocean Sciences
- Gordon Pullar, Alaska Native and Rural Development Department
- Dana Thomas, Math and Statistics

**September 2008**
Concerning Required Science Courses:
- Rich Boone, Biology
- John Keller, Chemistry
- Mike Sfraga, Geography
- Carol Lewis, Natural Resources and Agricultural Sciences

No negative comments were received and all concerns raised were answered. Department response was favorable. Enrollment increases will be minimal as well as the demand on department faculty.

21. **POSITIVE AND NEGATIVE IMPACTS**
Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

This course is a required course in the ENVI certificate program that will provide the student the opportunity to develop the skills and training necessary either for immediate employment in a variety of science-related fields or for entry into a science-related associate or baccalaureate degree programs. This class could improve Alaska Native enrollment in baccalaureate degrees. UAF departments that could directly benefit include Biology Geology, Chemistry, Natural Resource Management, Environmental Engineering, and Mining Engineering.

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**JUSTIFICATION FOR ACTION REQUESTED**
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

This course is a core requirement for the ENVI Certificate program. It is designed to give students hands-on and practical experience with the water quality field measurement theory and techniques. This type of training is important in rural areas with a need for persons with skills in natural resources-related fields. Thus, rural individuals will be required to understand and participate in data collection and analysis in order to relate results to their local and regional employers, corporations and agencies.
### APPROVALS:

<table>
<thead>
<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature, Chair, College/School Curriculum Council for:</td>
<td>Date</td>
</tr>
<tr>
<td>Signature, Dean, College/School of:</td>
<td>Date</td>
</tr>
<tr>
<td>Signature of Provost (if applicable)</td>
<td>Date</td>
</tr>
</tbody>
</table>

*Offerings above the level of approved programs must be approved in advance by the Provost.*

### ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

| Signature, Chair, UAF Faculty Senate Curriculum Review Committee | Date |

### ADDITIONAL SIGNATURES: (If required)

<table>
<thead>
<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Signature, Dean, College/School of:</td>
<td>Date</td>
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</tbody>
</table>
ATTACH COMPLETE SYLLABUS (as part of this application).
Note: syllabus must follow the guidelines discussed in the Faculty Senate Guide http://www.uaf.edu/uafgov/faculty/cd/syllabus.html.
The department and campus wide curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course change will be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES
During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:
   - Title, number, credits, prerequisites, location, meeting time (make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
   - Name, office location, office hours, telephone, email address.

3. Course readings/materials:
   - Course textbook title, author, edition/publisher.
   - Supplementary readings (indicate whether required or recommended) and
   - any supplies required.

4. Course description:
   - Content of the course and how it fits into the broader curriculum;
   - Expected proficiencies required to undertake the course, if applicable.
   - Inclusion of catalog description is strongly recommended, and
   - Description in syllabus must be consistent with catalog course description.

5. Course Goals (general) and Student Learning Outcomes (more specific)

6. Instructional methods:
   - Describe the teaching techniques (e.g., lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

7. Course calendar:
   - A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g., it is not adequate to say “lab.” Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

8. Course policies:
   - Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

9. Evaluation:
   - Specify how students will be evaluated, what factors will be included, their relative value, and
   - how they will be tabulated into grades (on a curve, absolute scores, etc.)

10. Support Services:
   - Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

11. Disabilities Services:
The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.
   - State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.”
Course Title: Introduction to Water Quality I: Measurement and Calibration

Dept. & Num: ENV 110

Credits: 1

Prerequisites: None

Dates: TBA

Days and Times: TBA

Location: Face to face in needed location

Instructor: Dr. Todd Radenbaugh

Phone: 907.842.5109 or 1800.478.5109

Fax: 907.842.5692

Email: bftar@uaf.edu

Hours Available: TBA

Text: Monitoring Surface Water Quality A Guide for Citizens, Students, and Communities in Atlantic Canada


Supplemental readings


http://www.epa.gov/volunteer/stream/stream.pdf


EPA Document 841-B-97-003.

http://www.epa.gov/owow/monitoring/volunteer/stream/


Supplies

UAF BBC will provide water quality sampling equipment

Course Description:
This course introduces students to standard water quality methods used and applies them to rural Alaska. Students will become familiar with EPA water quality standards and programs that help preserve water quality in rural communities. Key topics covered include: stream ecology, wastewater management, stormwater runoff, and data analysis.

Instructional Methods
The course will be taught using a combination of lectures, laboratory analysis, field experiences and homework assignments. Laboratory and field sessions are intended to provide opportunity for students to conduct water quality sampling, testing, and data recording with special attention to quality assurance. Lectures cover topics that will allow students to accurately collect data under the guidelines of water quality standards and report information.

Course Objectives:

- Identify the major types of water pollution and its effects on aquatic ecosystems
- Identify the ways in which humans influence aquatic systems
- Learn to use Excel spreadsheets for data entry and plotting
- Perform standard water quality analysis on a local stream
- Discuss and list ways to reduce water pollution
- Perform a literature search on stream water quality
- Complete a water quality report based on work completed in this course
Course Schedule (example: course could be taught over a number of time periods)
The course will meet over five weeks: lectures are every Monday, Tuesday and Wednesday evening for one hour, and there is a two-hour lab on Wednesdays from 3-5pm

Week 1  Water and How Humans Interact with It
         Introduction/review of water cycle
         Importance of water and water quality
         Point and non-point sources of pollution

         Lab – laboratory procedures and safety

Week 2  Field Quality Assurance
         The scientific method and data collection
         Recording your observations and writing accurate descriptions
         Introduction to water quality instruments and measurements
         Prevention of sample contamination

         Lab – Introduction to water quality monitoring equipment
         Using temperature data loggers

Week 3  Water Quality Parameters
         Measurement and calibration
         General sampling procedures for water collection and analysis with probes
         Data analysis
         Field trip/Lab – Field safety and Collecting water samples

Week 4  Water Sampling
         Data analysis and graphs
         Methods

         Lab – Data entry and analysis using Excel

Week 5  Writing the Report
         Writing water quality reports
         Scientific writing
         Results writing
         Conclusion writing

Schedule subject to change to meet instructor’s calendar

Course Policies
Students are expected to conduct themselves in a responsible and courteous manner. Attendance is mandatory. Late assignments are accepted only when pre-arranged with the instructor. UAF requires all students to conduct themselves according to the UAF Honor Code. Cheating, copying, and other forms of academic dishonesty may result in disciplinary action and other sanctions. It is expected that tolerance of others with different gender, race, and ethnic backgrounds be shown in class discussions and writings. The instructor reserves the right to amend this syllabus as needed.

Assignments
1. Students will demonstrate skills using lab equipment (i.e., safety measures, proper use, proper disposal and proper storage)
2. Students will use examples of graphical outputs and interpret water quality. Individual will present orally her conclusions based on graphical information and analysis.

3. Students will incorporate “COMMONLY USED ENVIRONMENTAL TERMS” into oral and written reports (see pg. 64 in text).

4. Case study research and review with oral presentation and written synopsis.

5. Students will compile all components into a Final Lab Report

**Evaluation**
Students will participate in lectures, contribute to class discussions, take part in field and laboratory activities and complete a Lab Report/Scientific Paper at the completion of the class.

- 10% Demonstrated skill using lab equipment
- 5% Oral presentation of case study
- 5% Written synopsis of case study
- 10% Quiz on commonly used environmental terms
- 20% Analysis of graphs presentation
- 50% Final water quality lab report (includes components of all activities done in course)

The grading scale is as follows:
A = 90% - 100%, B = 80% - 89%, C = 70% - 79%, D = 60% - 69%, F = 0% - 59%

**Support and Disability Services:**
- Distance Library Services are available at [http://www.uaf.edu/library/offcampus/index.html](http://www.uaf.edu/library/offcampus/index.html)
  Toll free Library hotline 1-800-478-5348, ask for Off-Campus
- Tutoring is available to eligible students via BBC 1-800-478-6109 or UAF Student Support Services [http://www.uaf.edu/sssp/](http://www.uaf.edu/sssp/)
- UAF Disability Services for Distance Students
  UAF has a Disability Services office that operates in conjunction with the College of Rural and Community Development campuses and UAF’s Center for Health and Counseling, provides academic accommodations to enrolled students who are identified as being eligible for these services. If you believe you are eligible, please visit [http://www.uaf.edu/chc/disability.html](http://www.uaf.edu/chc/disability.html) on the web or contact a student affairs staff person at you nearest local campus. You can also contact Disability Services on the Fairbanks Campus at (907) 474-7043, fydso@uaf.edu
ENV110: WATER SAMPLING FIELD FORM

Name of Beach ________________________________ Date _____/___/2008

Nearest Town ________________________________________________________________

Describe Sampling Location (Note location on map and attach)

Latitude N ____________________ Longitude W ____________________

<table>
<thead>
<tr>
<th>SAMPLES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID:</td>
<td></td>
<td>Time: am/pm</td>
</tr>
<tr>
<td>Duplicate ID:</td>
<td></td>
<td>Time: am/pm</td>
</tr>
<tr>
<td>Field blank ID:</td>
<td></td>
<td>Time: am/pm</td>
</tr>
</tbody>
</table>

Weather conditions
- Sunny & clear
- Cloudy/Overcast
- Rain
- Fog
- Other (describe) _______________________

Water Temperature: ______ °F/ °C (circle one)
Air Temperature: ______ °F/ °C (circle one)
Wind Speed (approx.): _____________ mph
Wind direction: _____________
- On-shore
- Off-shore

Tidal conditions
- Tidally influenced yes/no (circle one)
Measurement taken at:
- High Tide
- Low Tide
- Ebbing
- Flooding
Low tide: Height _____ ft Time ____ (am/pm)
High tide: Height _____ ft Time ____ (am/pm)

Condition of the stream bank
Debris on bank (describe):
Debris in water (describe):
Vegetation on bank (% coverage) _________%
Vegetation in water (% coverage) _________%

Human activity in region
Approximate number of:
- Adults
- Children
- Dogs
- Other (describe) _______________________

Type of Activity:
- Swimmers
- Walkers
- Fishermen
- Boaters
- Other (describe) _______________________

Condition of the water
- Clear
- Cloudy and murky
- Oily film
- Other (describe): _______________________

Sources of pollution
- Water fowl (approx.#):_____________________
- Boats (approx. #):_____________________
- Other (describe):_____________________
- Presence of stormwater pipes or other diverted flow (describe):
- Sewage odor/presence (describe):

Additional comments, noteworthy unusual conditions:

Sampler Name (printed): __________________ Signature: __________________